SAFETY DATA SHEET

AQUAPHARM©

Safety Data Sheet compliant with OSHA 29 CFR 1910.1200 HCS

SECTION 1: Identification of substance / mixture and of the Supplier

(a) Product identifier

GHS Product identifier	Aquacid 108NS

(b) Other means of Identification

Alternative name	ATMP, AMP, NTMP, Aminotris(methylphosphonic acid); 1,1,1-Nitrilotris(methylphosphonic acid); Aminotri(methylenephosphonic acid); Nitrilotri(methylenephosphonic acid); NTMP; Tris(methylenephosphonic acid)amine
CAS No.	6419-19-8

(c) Recommended use of chemical and restrictions on use

Recommended Use	Additive for cleaning/washing agents, personal care products, bleach stabilisation, industrial water treatment, metal surface treatment, oilfield water systems, coatings & paints, paper industry, textile industry, water desalination systems, agrochemicals and ceramics as scale inhibitor, complexing agent.
Restriction on use	None

(d) Details of the supplier of the safety data sheet

Supplier	Aquapharm Chemicals Pvt. Ltd., 9th & 10th Floor, Amar Synergy 12 B, Sadhu Vaswani Road, Pune 411001, INDIA
Telephone and Fax	Tel: +91 20 66090000, +91 2145 251 090/1/2, Fax: +91 20 2605 3396
Contact details of person responsible for SDS	techsupport@aquapharm.net +91 98609 90014

(e)

Emergency contact for US	Domestic North America: Chemtrec: 1-800-424-9300 International: Chemtrec: 1-703-527-3887
Emergency contact for rest of world	Tel.: Chemtel: +1-813-248-0585 (MIS0006730) e-mail: ers@chemtelinc.com
Opening Hours	24 hours
Other Comments (e.g. Language of the phone service)	English

SECTION 2: Hazards Identification

(a) GHS Classification of the substance/mixture and any national or regional information

Classification according to GHS	Metal corrosion category 1 Eye irritant category 2A Acute oral category 5

(b) GHS Label Elements

Hazard Pictogram

Signal Word	Warning
Hazard Statements	H290 May be corrosive to metals H319 Causes serious eye irritation H303 May be harmful if swallowed
Precautionary Statements	P234 Keep only in original packaging P390 Absorb spillage to prevent material damage P406 Store in corrosive resistant / metal containers with glass/PVC/PP/GRP/PP liner P264 Wash thoroughly exposed body areas with water immediately after handling P280 Wear protective gloves/protective clothing/eye protection/ face protection P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P337+P313 If eye irritation persists: Get medical advice/attention P312 Call a POISON CENTER/doctor/physician

(c) Other Hazards — None

SECTION 3: Composition/Information on Ingredients

(a) Chemical Identity: Substance

	Substance Name	EC No.	CAS No.	GHS Classification	% Purity
	Amino tris (methylenephosphonic acid)	229-146-5	6419-19-8	H290 H319 H303	49-51%
	Impurities:				
	Phosphonic acid	237-066-7	13598-36-2	H302 H314	0- 4%
	Orthophosphoric acid	231-633-2	7664-38-2	H314	0-0.5%
	Hydrochloric acid	231-595-7	7647-01-0	H314 H335	0-1%
	Formaldehyde	50-00-0	200-001-8	H301 H311 H314 H317 H331 H241 H350	0-0.005%

SECTION 4: First Aid Measures

(a) Description of necessary first aid measures

General Notes: Immediately call a POISON CENTER or doctor/physician.

Inhalation: Remove patient to fresh air, keep warm and at rest, administer oxygen if necessary.

Skin Contact: Thoroughly wash the contaminated skin. Remove the contaminated clothes and shoes. Consult a doctor if symptoms develop. Wash the clothes and shoes before reusing them

Eye Contact: Immediately wash the eyes thoroughly, opening eyelashes from time to time. Check if the victim is wearing contact lenses; if yes, remove them. Wash for at least 10 minutes. Consult a doctor in case of irritation.

Ingestion: Immediately consult a physician for advice.

(b) Most important symptoms and effects, both acute and delayed

Refer to section 11 for more information on health effects and symptoms.

(c) Indication of immediate medical attention and special treatment needed, if necessary: None specific

SECTION 5: Fire fighting measures

(a) Extinguishing media:

Suitable extinguishing media: Water spray, foam, dry chemical, or carbon dioxide

Unsuitable extinguishing media: None known

(b) Special Hazards arising from the material: Decomposes and gives irritant fumes

Hazardous Combustion Product: During combustion: Corrosive vapours are released such as Carbon monoxide, carbon dioxide, phosphines, phosphorous oxides (P_xO_y), Nitogen Oxides (NOx) and HCl.

(c) Special protective equipment and preacautions for fire fighters: Wear self-contained breathing apparatus and suitable protective clothing.

SEDTION 6: Accidental release measures

(a) Personal precautions, protective equipment and emergency procedures

For non emergency personnel:

Protective Equipment: Use personal protection recommended in section 8

Emergency Procedures: Evacuate the spill area safely to permit authorised personnel to handle the spill.

For Emergency Responders: Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding.

(b) Environmental precautions:

Keep out of drains and watercourses. Use containment walls to contain, reclaim or safely dispose off spills. Follow local regulations for safe disposal of contaminated absorbent materials and containers. Wash spill areas with water.

(c) Methods and material for containment and cleaning up:
Contain large spills with containment walls and transfer the material to appropriate containers for reclamation or disposal. Collect by sweep, scoop or vacuum and remove. Flush spill area with water. Small spills can be neutralised with lime or soda followed by flushing with water.

SECTION 7: Handling and storage

(a) Precautions for safe handling:

Protective measures	Handle in accordance with good industrial hygiene and safety practices as mentioned in section 8. These practices include using appropriate personal protection, avoiding unnecessary exposure and removal of material from eyes, skin and clothing. Do not eat, drink or smoke when handling this product. Wash thoroughly after handling, avoid breathing vapour or mist. Emptied containers retain vapour and product residue. Observe all recommended safety precautions until container is cleaned, reconditioned or destroyed. The reuse of this material's container for non-industrial purposes is prohibited and any reuse must be in consideration of the data provided in this material safety data sheet.
Advice on general occupational Hygiene	Keep personal protective equipment in a clean place, away from the work area. Use clean and correctly maintained personal protective equipment. Always wash your hands after handling the product. Do NOT eat or drink in the workplace.

(b) Conditions for safe storage including any incompatibilities:

Technical measures and storage conditions	Take all necessary precautions to avoid the accidental release of the product outside due to the rupture of containers or transfer systems. Ensure there is a suitable retention system. Storage facilities should be dry.
Packing Material:	
Suitable packing and storage material	SS 316 (only for transportation purpose), original containers or metal containers with glass, PVC, PP, PE or GRP lining.
Unsuitable packing and storage material	Do not store in metal containers such as carbon steel, aluminium etc.
Requirements for storage rooms and vessels	Store in a cool, well ventilated area. Store above freezing point (- 12 deg C).
Storage Class	8
Further information on storage conditions	Shelf life: 24 months

SECTION 8: Exposure control / personal protection

(a) Control Parameters

Hydrogen chloride :
ACGIH TLV: 2 ml/m3; ; ceiling
OSHA PEL: 5 ml/m3 ; 7 mg/m3 ; ; 8-hr TWA
Mexican OEL: 5 ml/m3 ; 7 mg/m3 ; ; 8-hr TWA

orthophosphoric acid:
ACGIH TLV: 1 mg/m3 ; ; 8-hr TWA
ACGIH TLV: 3 mg/m3 ; 15 min STEL
OSHA PEL: 1 mg/m3 ; ; 8-hr TWA
OSHA PEL: 3 mg/m3 ; ; 15-min STEL
Mexican OEL: 1 mg/m3 ; ; 8-hr TWA
Mexican OEL: 3 mg/m3 ; ; 15-min STEL

formaldehyde: ACGIH TLV: 0.3 ml/m3 ; 0.37 mg/m3 ; ; ceiling
A2: The ACGIH has designated this component as an "A2" substance, thereby including it among industrial substances suspect of carcinogenic potential for man.
Worker exposure by all routes should be carefully controlled.
The ACGIH has designated this component as having confirmed potential for worker sensitization as a result of either dermal contact or inhalation exposure based on the weight of scientific evidence.

OSHA PEL: 0.75 ml/m3 ; ;8- hr TWA
OSHA PEL: 2 ml/m3 ; ; 15-min STEL
Mexican OEL: 2 ml/m3 ; 3 mg/m3 ; ; ceiling

(b)	Appropriate engineering controls	No specific additional engineering controls are required. Provide good natural or artificial ventilation.
(c)	Personal Protection equipment	
	Eye / face protection	Use face shield and/or chemical goggles. Have eye wash facilities immediately available at any location where eye contact can occur.
	Skin protection Hand Protection: Other skin protection:	Wear gloves, suitable materials include PVC, Nitrile Rubber, natural rubber, butyl rubber, chloroprene and fluorocarbon rubber. Do not use leather gloves. Wear suitable protective clothing including aprons, boots, or a suitable acid resistant chemical suit. Wash thoroughly after handling. Although this product does not present a significant skin concern, minimize skin contamination by following good industrial practice.
	Respiratory protection	Avoid breathing vapour / mist. Use approved respiratory protection equipment when air borne exposure is excessive. Consult respirator manufacturer to determine the appropriate type of equipment for a given application. Observe respirator use limitations specified by the manufacturer. In case of insufficient ventilation, wear suitable respiratory equipment

SECTION 9: Physical and chemical properties

Molecular Weight	299
Appearance	aqueous solution
Colour	Colourless to pale yellow
Odour	Typical
Odour Threshold	Not available
pH	< 2.5 of 1% soln at 25 deg C
Freezing point/range	Minus 12 ^{o}C
Initial boiling point / range	Aprox. 100 ^{o}C
Flash point	Non flammable aqueous solution
Evaporation rate	Not available
Flammability (solid, gas)	Non flammable aqueous solution
Upper/lower flammability or explosive limit	Not applicable
Vapour Pressure	2.7 x 10^{-09} Pa (estimated for active substance)
Specific gravity (at 25 ^{0}C)	1.31 – 1.35
Solubility(ies)	Miscible in water
Partition coefficient (N-Octanol / Water)	-3.5
Auto ignition temperature	Not Applicable
Decomposition temperature	Decomposes at approx. 178 deg C (for active substance)
Viscosity	Not Available

SECTION 10: Stability and reactivity

(a)	Reactivity	Reacts vigorously with alkalis, metals and oxidising agents
(b)	Chemical Stability	Stable under normal conditions of storage and transport
(c)	Possibility of hazardous reactions	Reacts vigorously with alkalis, metals and oxidising agents. Can liberate flammable hydrogen gas on reaction with metals.
(d)	Conditions to avoid	None specific
(e)	Incompatible materials	Alkalis, metals and oxidising agents
(f)	Hazardous decomposition products	Carbon monoxide, carbon dioxide, phosphines, phosphorous oxides (P_xO_y), Nitogen Oxides (NOx) and HCl.

SECTION 11: Toxicological information

(a)	Likely routes of exposure	Eyes and oral
(b)	Potential health effects	

Eyes	Irritating to eyes
Skin	No more than slightly irritating to skin. No more slightly toxic if absorbed.
Inhalation	No data available
Ingestion	May be harmful if swallowed

(c) Information on toxicological effects

Acute oral toxicity	Species: Rat Route of administration: Oral Doses: 2000-3980 mg/kg LD50: 2910 mg/kg Symptoms: Clinical signs included weakness, diarrhoea, salivation and tremors. Necropsy findings comprised inflammation of the gastrointestinal mucosa and liver and renal hyperaemia.
Acute inhalation toxicity	Not anticipated to be of concern due to low vapour pressure.
Acute dermal toxicity	Species: Rabbit Route of administration: Dermal Doses: 1000-6310 mg/kg Exposure period: 24 hours LD50: >6310 mg/kg Symptoms: No deaths occured. Activity and appetite were temporarily reduced.
Skin irritation	Species: Rabbit Method: OECD guideline 404 Result: mild irritating with no corrosive effects. Symptoms: Mild erythema reactions but no oedema was observed
Serious eye damage / irritation	Species: Rabbit Method: equivalent to OECD 405 Result: Moderately irritating to eyes Symptoms: At 1 hour oedema, lacrimation, congestion with iris details partially obscured and moderate redness of the conjunctivae were present, increasing slightly up to 24 hours. The iris continued to react to light and the degree of irritation gradually reduced. Iris clarity was almost normal by day 7.
Respiratory irritation	No data available
Sensitisation	Species: Guinea pig Result: Not sensitising Method: Similar to OECD 406
Repeated dose toxicity	No classification is proposed for repeated dose toxicity. Species: Rat NOAEL (2 years): > 500 mg/kg/d Method: similar to OECD 453 Symptoms: Differences in some organ weights (spleen, liver, kidney, testes) at some necropsy times but inconsistent effects
Germ cell mutagenicity	In-vitro: Bacterial mutagenicity: Negative results Mammalian Mutagenicity: Negative results In-Vivo genotoxicity: Negative results
Carcinogenicity	No classification is proposed for carcinogenicity Species: Rat Route of administration: Oral NOAEL: ≥500 mg/kg bw/day Result: Not carcinogenic
Reproductive toxicity	No signs of effect on fertility Species: rat NOAEL (P, F1, F2 & F3): 275 mg/kg bw/day (males) & 310 mg/kg bw/day (females)

Specific target organ toxicity – single exposure (STOT SE)	No classification required
Specific target organ toxicity – repeated exposure (STOT RE)	No classification required
Aspiration hazard	No significant adverse effects are expected to develop if small amounts (less than a mouthful) are swallowed.

SECTION 12: Ecological information

(a) Ecological Toxicity

Toxicity on Fish:
Species: Rainbow trout (*Oncorhynchus mykiss*)
Duration: 96 hrs
Water type: Fresh
LC50: 160 mg/l

Early life stage toxicity study
Species: Rainbow trout (*Oncorhynchus mykiss*)
Duration: 60 days
Water type: Fresh
NOEC: 23 mg/l

Toxicity on Invertebrates:
Species: Water flea (*Daphnia magna*)
Duration: 48 hrs
Water type: Fresh
EC50: 297 mg/l

Species: *Daphnia magna*
Duration: 28 days
Water type: Fresh
NOEC: >= 25 mg/l

Toxicity on Algae:
Species: Algae (*Selenastrum capricornutum*)
Duration: 96 hrs
Water type: Fresh
EC50: 12.0 mg/l
Algal growth inhibition is due to ability of this product to complex metal ions and not to toxicity per se.

(b) Persistence and degradability

Not rapidly degradable

Test Method	Degree of Removal
OECD 301D (Closed bottle test)	22 – 23% in 28 d
OECD 302A (Modified SCAS) 126 d	15 – 35 %
OECD 302B (Zahn Wellens Test), 28 d	23%
OECD 301E (Mod.OECD Screening test), 28 d	5%
OECD 306 (Biodegradability in Seawater), 28 d	2.6 – 21.7 %

(c) Bioaccumulative potential

BCF:22 (Cyprinus carpio)
Extremely low bioaccumulation potential

(d) Mobility in Soil

Koc: 11740
log Koc: 4.07

(e) Other adverse effects

No further information available

SECTION 13: Disposal considerations

(a) Waste treatment methods

All local and national regulations should be followed. Consult regulatory officials for disposal requirement. For small quantities neutralize with lime or soda ash and flush away with plenty of water. For large quantities send to special waste disposal system and burn in proper incinerator. This product should not be dumped in public storage and sewers / waterways.

(b) **Packaging**

	Methods of disposal	The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible
	Special precautions	This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers
(c)	US EPA RCRA Status	This material when discarded is a hazardous waste as that term is defined by the Resource, Conservation and Recovery Act (RCRA),40 CFR 261. See disposal considerations below for U.S. EPA disposal requirements. Consult regulatory officials for performance standards.
(d)	US EPA RCRA hazardous waste number	D002
	Compound/Characteristic	Corrosivity
(e)	Disposal considerations	Deactivation Consult 40 CFR 268.48 for concentration based standard

SECTION 14: Transport information

	DOT/TDG/ ADR/RID/GGVSE	**(IMDG-Code/GGVSee**	**ICAO-IATA/DGR**
(a) UN Number	UN 3265	UN 3265	UN 3265
(b) UN Proper Shipping Name	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S., (Aminotris (methylenephosphonic acid))	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S., (Aminotris (methylenephosphonic acid))	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S., (Aminotris (methylenephosphonic acid))
(c) Transport Hazard Class	Class 8: Corrosive material 	Class 8: Corrosive material 	Class 8: Corrosive material 
(d) Packing Group	III	III	III
(e) Environmental hazards	No	No	No
(f) Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not available	Not available	Not available
(g) Special precautions for user	**Hazard identification number:** 80	**Passenger aircraft** 852: 5 L **Cargo aircraft** 856: 60 L	**Hazard identification number:** 80

SECTION 15: Regulatory information

Inventory Status	All components are on the following inventories: US TSCA, EU EINECS, Chinese IECSC, New Zealand NZIoC, Australian AICS, Japan ENCS, Canadian DSL, Korean KECI, Philippine PICCS and Taiwan TCSI
Canadian WHMIS classification	D2(B) - Materials Causing Other Toxic Effects E - Corrosive Material
HAZCOM Standard Status	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Stockholm convention on Persistant Organic Pollutants (POPs)	None of the componants are listed in POPs.

Montreal Protocol on substances that deplete ozone layer	None of the componants are listed in list of controlled substances as per Montreal Protocol.
Rotterdam Convention	None of the components are covered under Rotterdam Convention
SARA Hazard Notification: Hazard Categories Under Title III Rules (40 CFR 370)	
SARA Section 311/312 Hazard Categories	Immediate (acute) health effect
SARA Title III Section 302 Extremely Hazardous Substances	Formaldehyde
SARA Title III Section 313 Toxic Chemicals	Formaldehyde
US EPA CERCLA Hazardous Subtances (40 CFR 302)	hydrogen chloride Orthophosphoric acid formaldehyde
CERLA Reportable Quantities	5,000 lbs hydrogen chloride 5,000 lbs orthophosphoric acid 100 lbs formaldehyde For this/these chemicals, release of more than the Reportable Quantity to the environment in a 24 hour period requires notification to the National Response Center (800-424-8802 or 202-426-2675).
California proposition 65	To the best of our knowledge, this product does not contain any of the listed chemicals, which the state of California has found to cause cancer, birth defects or other reproductive harm.

SECTION 16: Other information

Key literature references

- Environmental Properties and safety Assessment of Organic Phosphonate used for detergent and water treatment Applications----W.E. Gledhill and T.C.J. Feijtel
- Chemical Safety Report for ATMP (CAS No. 6419-19-8)

Procedure used to derive the classification according to Regulation OSHA 29 CFR 1910.1200 HCS

Classification	**Classification**
Metal Corrosion Category 1	Metal Corrosion Category 1
Acute oral toxicity Category 5	Acute oral toxicity Category 5
Eye damage Category 2A	Eye damage Category 2A

Abbreviations and acronyms

LD50: Median lethal dose
LC50: Lethal Concentration
EC50: Half maximal effective concentration
NOEC: No Observed Effect Concentration
NOAEL: No observed adverse effect level
BCF: Bioconcentration Factor
STEL: Short term exposure limit
TLV: Threshold limits
TWA: time weighted average
ADNR: Accord Européen relatif au Transport International des Marchandises Dangereuses par voie de Navigation du Rhin
ADR: Accord européen relatif au transport international des marchandises Dangereuses par Route
IATA: International Air Transport Association
IMDG: International Maritime Dangerous Goods Code

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Reason for Update	All sections are revised as per OSHA 29 CFR 1910.1200 HCS

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For all purpose the English version is final ***ADC/F/25/Version GHS***